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**Scattering of magnetized electrons at the boundary of low temperature plasmas**[1] DENNIS KRUEGER, JAN TRIESCHMANN, RALF PETER BRINKMANN, Institute of Theoretical Electrical Engineering, Ruhr University Bochum, Germany — Magnetized low temperature plasmas with magnetic fields of some 10 to 100 mT are characterized by an electron Larmor radius small compared to all other length scales of the system. In this regime, the classical drift approximation applies. Inside the plasma boundary sheath, this approach breaks down, as the sheath scale is given by the Debye length, which is even smaller than the Larmor radius. When applying different models for these domains, an appropriate boundary condition for the interface has to be utilized. This work investigates the dynamics at this interface with the help of a 3D kinetic single electron model. A comprehensive comparison of two selected sheath models, a classical bohm sheath and the assumption of a hard wall is implemented. Thereby the influence of these models with respect to specific gyro coordinates is investigated and used to characterize the respective system dynamics. Moreover effects like the drift of the guiding center due to the large $\vec{E} \times \vec{B}$ drift inside the sheath, which leads to a cross field diffusion similar to collisions outside the sheath, is analyzed and compared.

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